

METHOD AND APPARATUS FOR CONTROLLING A PIEZO ACTUATOR

ABSTRACT OF THE DISCLOSURE

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A method and apparatus for controlling a piezo-electric actuator coupled to a driven member is disclosed. The piezo-electric actuator is responsive to waveforms with asymmetrical voltage/current profiles on the rising and falling edge to effect consistent and cumulative movement of the driven member in one of two directions throughout the reciprocations of the piezo-electric actuator. The waveforms are digitally generated from a stored set of numbers or a function for generating the set of numbers. The numbers correspond with the discrete digital values associated with the desired waveforms for moving the driven member in either of at least two directions. The controller may be used to drive more than one piezo-electric actuator. The controller may include responsiveness to a feedback of the position of the driven member to accurately position the driven member. The controller may also include the ability to update the function or values stored in memory so as to couple more efficiently with new or existing actuators. The controller exhibits a relatively smaller form factor and reduced complexity when compared with prior art analog drivers.